are to be congratulated on the continued successful results of their labours.

DR. OBST, the director of the Ethnographical Museum at Leipzig, after attending the Archæological Congress at Tiflis, intended to make an exploring tour in the Caucasus, Armenia, and Asia Minor, and then to return to Saxony *viâ* Constantinople and Athens.

A STRANGE phenomenon was recently observed at Emerson, near Lake Winnipeg. A dark cloud formed of myriads of winged black ants passed over the place from east to west. When it descended the ground over a large area was covered an inch deep with the insects.

MAUNA LOA (Hawaii) is again active, and the lava threatens the port of Hilo, situated on the east side of the island.

IN a letter which we have received from Mr. G. H. Kinahan he disavows the suggestion imputed to him (NATURE, vol. xxiv. p. 471) that Laurentian rocks occur in Co. Tyrone.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♀), a Bonnet Monkey (*Macacus radiatus* ♀) from India, presented by Mr. G. E. Jarvis; a Vervet Monkey (*Cercopithecus lalandii* ♂) from South Africa, presented by Mrs. Brassey; two Leopards (*Felis pardus*) from Ceylon, presented by Lieut.-Col. J. S. Armitage, F.Z.S.; a Mesopotamian Fallow Deer (*Cervus mesopotamicus* ♀), two Beatrix Antelopes (*Oryx beatrix* ♀ ♀), two Arabian Gazelles (*Gazella arabica* ♂ ♀) from Muscat, presented by the Lord Lilford, F.Z.S.; a Naked-footed Owlet (*Athene noctua*), European, presented by Mr. R. J. Marlton; a Common Kestrel (*Tinnunculus alaudarius*), a Common Hare (*Lepus europæus*), European, presented by Mr. W. K. Stanley; a Paradise Whydah Bird (*Vidua paradisea*) from West Africa, presented by Mr. Bowyer Bower; two Bonnet Monkeys (*Macacus radiatus*) from India, a Bell's Cinixys (*Cinixys belliana*) from East Africa, deposited; an Osprey (*Pandion haliaetus*), European, purchased; a Hardwicke's Hemigale (*Hemigalea hardwickii*) from Borneo, received on approval.

OUR ASTRONOMICAL COLUMN

THE SATELLITE OF NEPTUNE.—We subjoin such a table as was suggested by Prof. Newcomb for indicating with little trouble the approximate position of the satellite of Neptune, at any time about the approaching opposition. The argument *u* has the same significance as in Newcomb's Tables :—

Argument *u*.		Angle of Position.		Distance.
°	°	°		″
0	180	73·3	253·3	11·4
10	190	65·7	245·7	13·1
20	200	59·7	239·7	14·6
30	210	54·8	234·8	15·8
40	220	50·4	230·4	16·6
50	230	46·3	226·3	16·9
60	240	42·3	222·3	16·9
70	250	38·2	218·2	16·4
80	260	33·8	213·8	15·5
90	270	28·6	208·6	14·3
100	280	22·2	202·2	12·7
110	290	14·0	194·0	11·0
120	300	2·7	182·7	9·2
130	310	346·4	166·4	7·7
140	320	324·2	144·2	6·8
150	330	299·4	119·4	7·0
160	340	278·6	98·6	8·0
170	350	263·7	83·7	9·6
180	360	253·3	73·3	11·4

Values of *u* at Greenwich noon

	°				
Oct. 28	187·55	Nov. 27	225·26	Dec. 27	262·95
Nov. 7	80·12	Dec. 7	117·83	Jan. 6	155·51
17	332·69	17	10·39		

Motion of *u* in

Days.	°	Hours.	
1	61·26	1	2·55
2	122·51	2	5·11
3	183·77	3	7·66
4	245·03	4	10·21
5	306·28	5	12·76
		6	15·31
		12	30·63

From which figures *u* may be interpolated for any hour required. When *u* is found in the second column of the table, the angle of position is to be taken from the second column.

COMET 1881 *f* (DENNING, OCTOBER 3).—The comet discovered by Mr. W. F. Denning of Bristol during the night of the 3rd inst. has been observed at Marseilles by M. Coggia, and at Lord Crawford's Observatory at Dunecht. Elements calculated by Dr. Copeland and Mr. Lohse upon Dunecht observations on October 9, 10, and 12, are as follows :—

Perihelion passage 1881, September 12·0943, Greenwich M.T.

	°	′	″	
Longitude of perihelion	22	6	9	M. Eq. 1881·0
Ascending node	72	47	45	
Inclination	7	45	12	
Log. perihelion distance	9·859822			

Motion—direct.

Hence it is found that this comet, like that discovered by Mr. Barnard on September 19, is receding both from the sun and the earth. As remarked in Lord Crawford's Circular, No. 33, the elements bear some resemblance to those of the fourth comet of 1819, detected by Blanpain at Marseilles, which was certainly moving in an elliptical orbit of very limited dimensions. This circumstance alone attaches a particular interest to Mr. Denning's comet, and makes it of importance that it should be accurately observed for position as long as practicable.

CERASKI'S VARIABLE—U CEPHEI.—The following Greenwich times of minima depend upon Mr. Knott's observation on the 2nd inst. with the period $2^{d}\cdot49280$:—

	h.	m.		h.	m.		h.	m
Oct. 22	10	24	Nov. 11	9	1	Dec. 1	7	39
27	10	4	16	8	41	6	7	18
Nov. 1	9	43	21	8	20	11	6	57
6	9	22	26	7	59	16	6	37

BIOLOGICAL NOTES

THE HYPOPHYSIS IN ASCIDIANS.—In a second paper to the Belgian Academy on this subject (*Bull.* No. 6) M. Julin describes the quite special arrangement of the "hypophysary gland" in *Phallusia mamillata.* Besides the principal excretory duct existing in all Ascidians, and here considerably reduced, there are a large number of orifices by which the glandular tubes pour their product of secretion into the peribranchial cavity, of which the cloaca forms the median part, which receives all the products and residues of the organism, to be cast out. Hence the products of the hypophysis in this species are probably also excrementitial, and the gland is physiologically the kidney of the animal. If it be so with *P. mamillata* it is likely to be the same with the other Tunicata; and though, in most, the hypophysis opens into the mouth, one cannot infer that the product is to be utilised in the alimentary canal. From the morphological point of view it is noteworthy that in glands properly so-called, arising from an epidermic or epithelial invagination, the product of secretion is generally eliminated by a single orifice, and that the only exceptions occur in the category of urinary apparatus (Cestodes, Trematodes, &c.).

THE CORALS OF SINGAPORE.—We learn from a paper (*Proc.* of Berne Nat. History Society) by Prof. Studer, on the Corals of Singapore, that there are no less than 122 species known from this locality. Of these fifty-one species are special to the locality, whilst the others inhabit the seas of New Guinea, of the New Britannic Archipelago, of the Solomon Islands, and reach as far as Fiji, some few extending as far as Tahiti. At the same time the Singapore corals yield very few species in common with the Red Sea, the Seychelles, and Mauritius, and these are Fungidæ, but no Madreporaceæ. Thus it may be established that the coral fauna of the Indian Ocean must be divided into two distinct regions—a western and an eastern, the latter extending far to the east into the Pacific. These two

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regions are divided by deep sea and by coast-lines, which, as the eastern and southern coasts of India, do not afford the necessary conditions for the development of corals, whilst the extension to the east is much facilitated by low grounds and favourable coast-lines. Nevertheless, however different as to the species which inhabit them, both regions have a close likeness as to certain species, and both might be considered as having formed a single region, probably at the time when the great plateau of the Sunda Islands was a continuation of the continent, and when Madagascar and Ceylon were in close connection. As to the inhabitants of greater depths and of colder water—as the Gorgonids, the Anthozoæ, and the Primnoids—the same species are widely spread throughout the Pacific and the Indian Ocean, showing thus that the differentiation of shallow-water forms goes on more rapidly than that of the deep-water ones.

A Chemical Difference between Living and Dead Protoplasm.—From various experiments (chiefly with protoplasm of plants, also with Infusoria) Herren Loew and Bokorny find (*Pflüger's Arch.*) that living protoplasm possesses in an eminent degree the property of reducing the noble metals from solutions, and that this property is lost when death occurs. "It may well be inferred," say the authors, "that the mysterious phenomenon denoted by the name of 'Life' depends essentially on these reducing atom-groups. In the present state of science we explain these 'groups in motion,' these springs of life phenomena, as aldehyde groups, but would by no means exclude some different and better mode of explanation."

Rattlesnake Poison.—Dr. Lacerda Filho has published the results of his experiments on the poison of the rattlesnake (*Crotalus horridus*) in the *Archivos do Museu nacional do Rio de Janeiro*, iii. 1. The poison of *Crotalus horridus* acts upon the blood by destroying the red-blood corpuscles, and by changing the physical and chemical quality of the plasma. 2. The poison contains some mobile bodies similar to the micrococcus of putrefaction. 3. The blood of an animal killed by the snake's bite, when inoculated to another animal of the same size and species, causes the death of the latter within a few hours, under the same symptoms and the same changes of the blood. 4. The poison can be dried and preserved for a long time without losing its specific quality. 5. Alcohol is the best antidote to the poison of *Crotalus horridus* known until now.

The Spermogonia of Aecidiomycetes.—According to recent observations by Prof. Rathay (Vienna Acad. *Anz.*) the spermogonia of Uredineæ or Aecidiomycetes may discharge their contents without the action of external moisture, of rain or dew (the only way, as apparently supposed by A. de Bary). The process may occur in dry and hot sunny weather, and as follows:—These spermogonia produce in their interior not only mucilage and spermatia, but also sugar. In virtue of the latter they separate water by "osmotic action," and this water causes the inclosed mucilage to swell, and thereby afford exit from the cavity. The author's observations were made upon the spermogonia of *Gymnosporangium conicum* and *Puccinia suaveolens*.

Pelagic Fauna of Gulf Stream.—Alexander Agassiz gives an interesting account of his explorations of the floating fauna of the Gulf Stream in the vicinity of the Tortugas. The party remained at this station for some five weeks, being allowed to select quarters at Fort Jefferson. Unfortunately during the greater part of their stay the strong northerly winds interfered greatly with the surface fauna. Had the south-easterly winds prevailed the fauna would have been driven against the Tortugas. The few favourable days showed, however, a wealth of pelagic animals which had been hardly anticipated, and which proved how excellent a station this would be to investigate the fauna from. It also has the immense advantage of supplying the naturalist, and at his very door, with not only the common species of reef-building corals, but with the varied invertebrate fauna to be found in such places. Leaving a full enumeration of the species for another occasion, in the letter we now notice (*Bulletin* of the Mus. Comp. Zoology, vol. ix. No. 3) A. Agassiz mentions in a general way the presence of a couple of species of Firoloidea, of Phyllirhöe, of several Appendiculariæ, of a small Pyrosoma, of a Doliolum, two species of Salpa, and half a dozen species of Pteropods. The number of pelagic foraminifera was greatly disappointing; not once was a species of Globigerina met with, and the Radiolarians appear to have also been scanty. A list of the Ctenophoræ, Discophoræ, Siphonophoræ, and Hydroids met with is appended by Mr. Fewkes. Many of the species are indicated as new.

Retarded Development in Insects.—In a paper by Prof. C. V. Riley, at the recent meeting of the American Association, the author records several interesting cases of retarded development in insects, whether as summer coma or dormancy of a certain portion of a given brood of caterpillars, the belated issuing of certain imagines from the pupa, or the deferred hatching of eggs. One of the most remarkable cases of this last to which he calls attention is the hatching this year of the eggs of the Rocky Mountain Locust or Western Grasshopper (*Caloptenus spretus*) that were laid in 1876 around the Agricultural College at Manhattan, Kans. These eggs were buried some ten inches below the surface in the fall of 1876 in grading the ground around the chemical laboratory, the superincumbent material being clay, old mortar, and bits of stone, and a plank side-walk being laid above this. In removing and regrading the soil last spring Mr. J. D. Graham noticed that the eggs looked sound and fresh, and they readily hatched upon exposure to normal influences, the species being determined by Prof. Riley from specimens submitted by Mr. Graham. Remarkable as the facts are, there can be no question as to their accuracy, so that the eggs actually remained unhatched during nearly four years and a half, or four years longer than is their wont; and this suggests the significant question, How much longer the eggs of this species could, under favouring conditions of dryness and reduced temperature, retain their vitality and power of hatching? Putting all the facts together, Prof. Riley concludes that we are as yet absolutely incapable of offering any satisfactory explanation of the causes which induce exceptional retardation in development among insects. The eggs of Crustaceans, as those of *Apus* and *Cypris*, are known to have the power of resisting drouth for six, ten, or more years without losing vitality, while in some cases they seem actually to require a certain amount of desiccation before they will hatch. Yet the fact remains that different species act differently in this respect. In short, nothing is more patent to the observing naturalist than that species, and even individuals of the same species, or the progeny of one and the same individual, act very differently under like external conditions of existence: in other words, that temperature, moisture, food, &c., influence them differently. Hence, as has been shown by Semper to be the case with other animals, so it is with insects, changes in the external conditions of existence will not affect the fauna as a whole equally, but will act on individuals. We can understand how this great latitude in susceptibility to like conditions may and does, in the case of exceptional seasons, prove beneficial to the species by preserving the exceptional individuals that display the power to resist the unusual change; but we shall find ourselves baffled when we come to seek an explanation of the cause or causes of such retardation, unless we accept certain principles of evolution. In the innate property of organisms to vary, and in the complex phenomena of heredity, we may find a partial explanation of the facts, for the exceptional tendency in the present may be looked upon as a manifestation through atavism of traits which in the past had been more commonly possessed and more essential to the species.

PHYSICAL NOTES

A singular case of the production of sound by natural causes is recorded by M. Reuleaux (*Proc.* of the Nat. Hist. Soc. of Prussian Rhineland and Westphalia). He observed it while hunting in the Röderbacherthal, near the highest point of the Rhine province. The ground is, in the main, gently undulating and densely wooded. The valley, spacious on the eastern side, narrows rapidly at one part to a sort of pass, through which, for about one kilometre, the Röderbach flows westwards. A sout-west wind was blowing, and M. Reuleaux, coming along the hillside from the east, heard what appeared to be the strokes of a fine deep-toned bell in rapid succession. There was no such bell in the neighbourhood, and some other sounds soon heard satisfied him that the effects were of natural origin. Tones were heard growing in force to a maximum, then dying away; they were like those of organ-pipes at first, but their "clang" came to resemble that of a harp or violin. At the mouth of the pass, whence the sounds seemed to radiate, there was a strange agitation in the air, and mixture of sounds, some of which abruptly stopped. M. Reuleaux supposes bodies of air in vortical motion (*trombes*) to have been carried along from the pass, and the sound to have been due to conflict between the outer and the inner air at the mouth of such *trombes*, producing oscillations. There was a marked difference of temperature between

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